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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/520,870 | 01/11/2005 | David Antoine Christian Marie Roovers | NL 020609 | 6500 |
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| EXAMINER |
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SINGH, RAMNANDAN P

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| ART UNIT | PAPER NUMBER |
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2614

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05/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|-------------------------------|--------------------------------|--|
| Office Action Summary | Application No. 10/520,870 | Applicant(s) ROOVERS ET AL. | |
| | Examiner Ramnandan Singh | Art Unit 2614 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on April 24, 2007 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 7-10, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Romesburg [US 6,185,300 B1].

Regarding claim 1, Romesburg discloses an interference canceller shown in Fig. 1, comprising:

an adaptive filter (150) for modeling an interference, and a spectral processor (i.e. echo suppressor 160) for processing the modeled interference together with near end speech and the actual interference, an

interference model mismatch compensator (470) coupled to the adaptive filter for providing a mismatch signal ($c(n)$) for the spectral processor, the mismatch signal being modeled on a decay function independent of a speech input [Fig. 4; col. 16, lines 28-43; Fig. 1; col. 6, line 32 to col. 8, line 64; col. 12, line 46 to col. 16, line 27].

Claim 10 is essentially similar to claim 1 and is rejected for the reasons stated above apropos of claim 1.

Claim 9 is essentially similar to claim 1 except for a communication system for using an interference canceller. Romesburg further teaches a communication system, such as a mobile telephone system [col. 4, lines 19-39; col. 5, lines 1-63].

Regarding claim 2, Romesburg further teaches the interference canceller comprises a step size (μ_{VAR}) estimator coupled to the interference model mismatch compensator [Fig. 4; col. 13, line 26 to col. 14, line 62].

Regarding claim 3, Romesburg further teaches the interference canceller, wherein the interference model mismatch compensator is arranged for calculating an interference model mismatch estimate based on a minimum of the ratio of a spectral measure of the near end speech and actual interference, and the modeled interference of the adaptive filter [Figs. 4-5; col. 13, line 58 to col. 14, line 62].

Regarding claim 4, Romesburg further teaches the interference canceller, wherein the minimum of the ratio is determined over a time span (i.e. at the end of each block of 1 samples) [col. 14, lines 5-39].

Regarding claim 7, Romesburg further teaches the interference canceller, wherein the spectral measure is defined by some positive function of the spectral power concerned, such as the spectral magnitude, the squared spectral magnitude, the power spectral density or the Mel-scale spectral density [Fig. 5; col. 14, lines 26-39; col. 15, line 57 to col. 16, line 9].

Regarding claim 8, Romesburg further teaches the interference canceller, wherein the interference canceller is embodied as an echo canceller (430) [Figs. 1, 4, 5; col. 12, lines 46-67] or a noise canceller, wherein Examiner considers the word "or" as an alternative.

Regarding claim 12, Romesburg further teaches the interference canceller, wherein the communication system is selected from the group consisting of: a mobile telephone, a speech recognition system and a voice controlled system [col. 4, lines 19-39; col. 5, line 1 to col. 6, line 10].

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Romesburg as applied to claim 4 above, and further in view of Marchok et al [US 7,003,097 B2] .

Regarding claim 5, although Romesburg teaches minimizing signal delay to minimize the perceptibility of network echo [col. 5, lines 54-63], he does not teach expressly computing spectral information including the ratio, g_{STATUS} , during a pause (i.e. silence period) in the speech for a voice processing system.

Marchok et al teach computing spectral information for a silence descriptor (SID) during a pause (i.e. silence) in speech, wherein the echo canceller (EC) and noise reduction (NR) functions are integrated in a voice processing system [col. 7, lines 11-12; col. 7, lines 1-26; Fig. 4; col. 10, line 47 to col. 11, line 11; col. 13, lines 47-54].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Marchok et al with Romesburg in order to compute the ratio during a speech silence (i.e.

pause) to make an alternative use of at least one aspect of a voice processing system [Marchok et al; col. 10, lines 34-46].

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Romesburg as applied to claim 4 above, and further in view of Culliss [US 7,054,419 B2].

Regarding claim 6, although Romesburg teaches the interference canceller, wherein the minimum of the ratio is determined over a time span (i.e. at the end of each block of 1 samples) [col. 14, lines 5-39], he does not teach expressly the time span that lasts at least 4 seconds.

Culliss teaches using a time span (i.e. silence period) between 1 to 4 seconds in practice [Fig. 5; col. 6, line 54 to col. 7, line 14]. This meets the claimed limitation.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Culliss with Romesburg in order to determine the proper size of the time span (silence)

so that a quality of natural speech is maintained [Culliss; col. 6, lines 33-42].

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose

telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ramnandan Singh
Examiner
Art Unit 2614

